FILTERS BLOCK

USER MANUAL

214.5.884.012UM

PRODUCTS P/N: 451-0400 … 451-0403

Rev. 02.07.2024

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1 Important notes

Before using the equipment accurately read the present User Manual.

Instructions marked by this box are necessary for carrying out in order to avoid injuries sustaining at working with IUTD and to avoid IUTD damage.

Two marking types of parts are used in this and accompanied documents:

XXX-XXXX – Part number or Cat. Number referred to ordering documents;

214.X.XXX.XXX(-XX) or simplified X.XXX.XXX(-XX) – Cross ID referred to internal manufacturer documents.

Both can be used for ordering parts.

2 Description and operation

2.1 Purpose

Filters block is intended for setting constant pressure and cleaning feeding gases at GC inlet, preventing gas lines from pressure deviations. Types of gases to operate with: nitrogen, argon, helium and other gases non-aggressive to stainless steel, hydrogen, air.

Filters block is manufactured in 4 models:

- P/N 451-0400 – accommodates 3 channels (4 traps & 3 pressure controllers)
- P/N 451-0401 – accommodates 3 channels (4 traps)
- P/N 451-0402 – accommodates 2 channels (4 traps & 2 pressure controllers)
- P/N 451-0403 – accommodates 1 channels (1 trap & 1 pressure controller)

As for climate performance, filters block is referred to cold-temperate category 4.2 according to GOST 15150-69.

2.2 Specifications and delivery set

Technical specifications and delivery set are listed in Passport.

2.3 Construction and operation

Filters block overview is shown in Figure 1.

Items produced by SDO Chromatec may contain updated parts following new developments or may be undergone to non-essential modernization, not specified in this User manual.

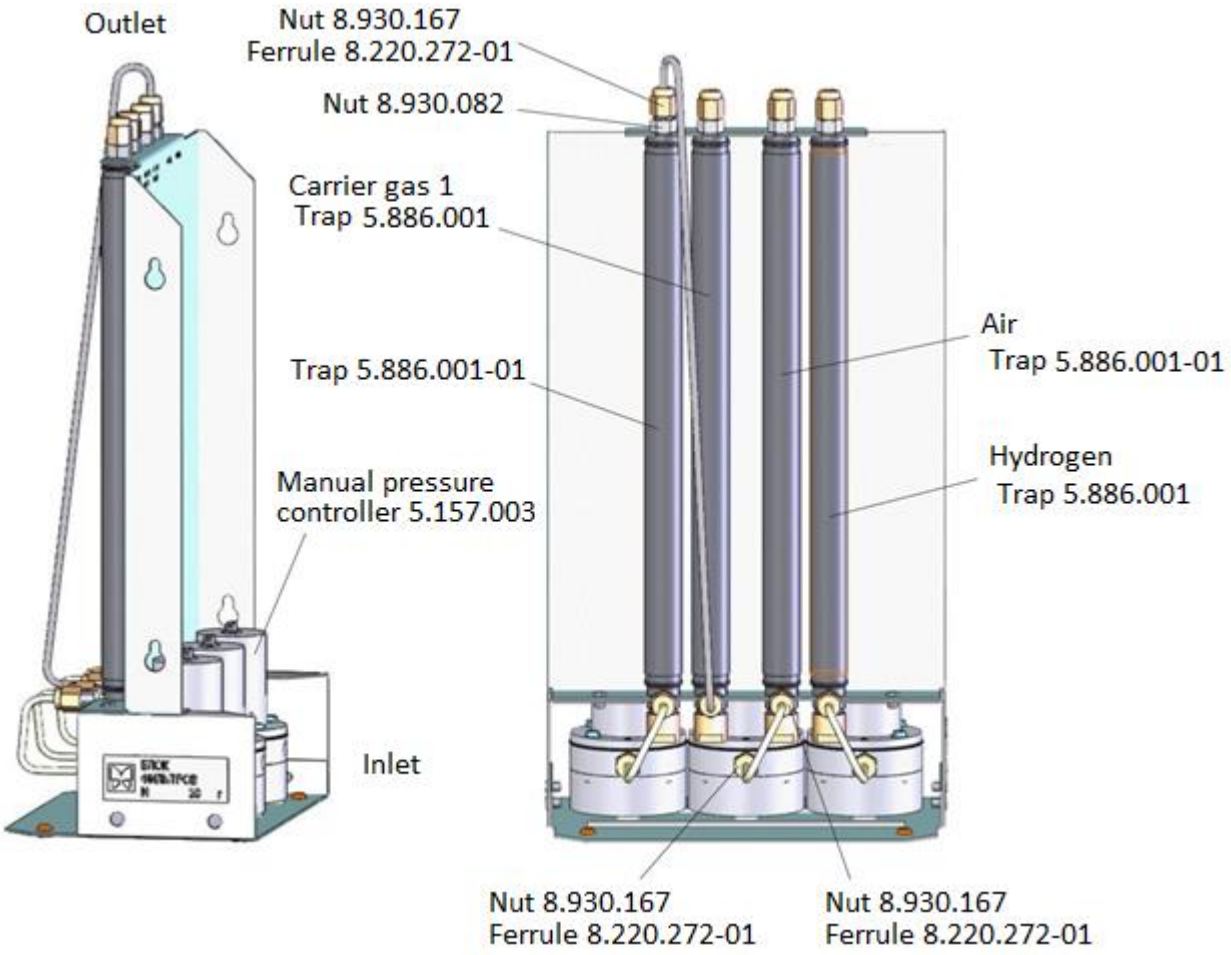


Figure 1 – Filters block P/N 451-0400. Overview

As for filters block of P/N 451-0400, gas lines of carrier gas, hydrogen and air can be connected to inlet ports of manual pressure controllers.

The pressure controllers stabilize pressure before filters and prevent gas lines of GC from over pressuring.

As for filters block of P/N 451-0401, gas lines are connected to the filters inlets immediately.

The filter 5.886.001 (-01) overview is shown on figure 2. There is a frit 5 µm in the outlet part of the filter.



Figure 2 – Filter 5.886.001 (-01). Overview

Filter's sorbents:

- In carrier gas line (filter 214.5.886.001-01) – active charcoal SKT, successive (filter 214.5.886.001) – molecular sieve CaA;
- In hydrogen line (filter 214.5.886.001) – molecular sieve CaA;
- In air line (filter 214.5.886.001-01) – active charcoal SKT.

Filters block is set at manufacturing for operation with Gas Chromatographs “Chromatec Crystal” series as follows in Table 1.

Table 1 – Filters block P/N 451-0400 tuning data at manufacturing

Line	**Operational input pressure, MPa**	**Output pressure, MPa**
Carrier gas 1	0.4	0.3
Air	0.18 (at compressor outlet)	0.15
hydrogen	0.14 (at hydrogen generator outlet)	0.1

If necessary, output pressure can be increased up to 0.4 MPa. Take into account that correct work of pressure controllers is provided if difference between input and output pressure level is not less than 0.03-0.05 MPa.

Figure 3 shows connections to filters block at adjustment. Manometer (from shipping kit) is to be attached to outlet of filter via tubing. Turning adjustment screw clockwise with screwdriver, output pressure increases. In order to reduce pressure (turning screw anticlockwise) it is necessary to bleed gas for a while unscrewing cup of manometer opposite fitting.

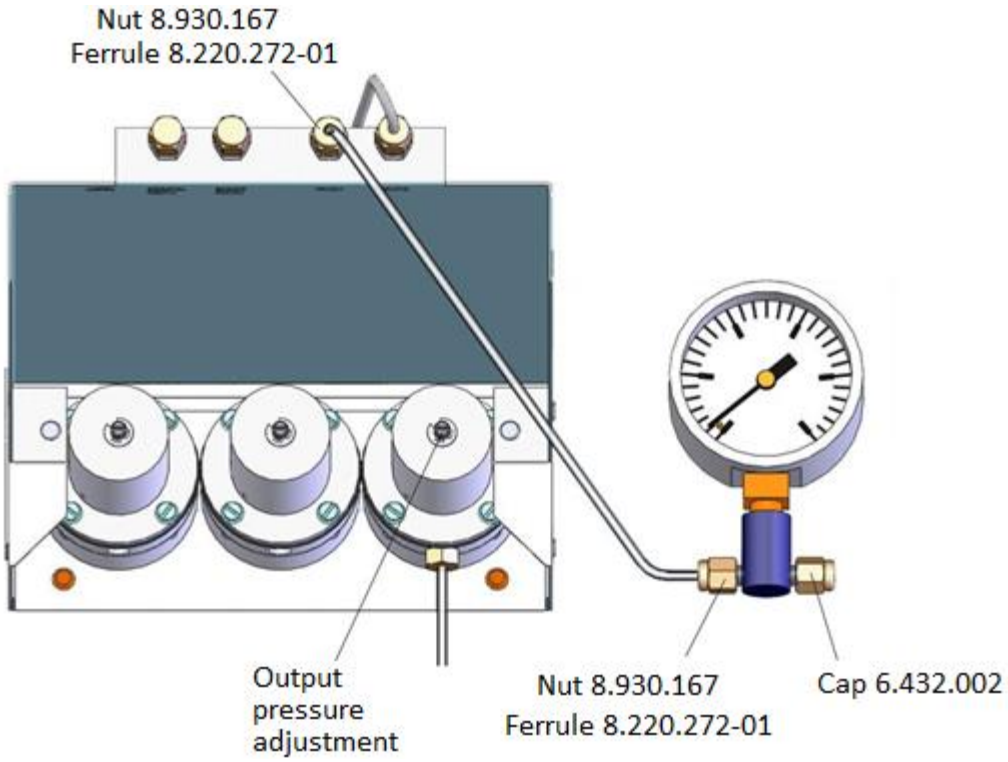


Figure 3 – Output pressure adjustment

Figure 4 shows pneumatic diagrams for different models of Filters block.

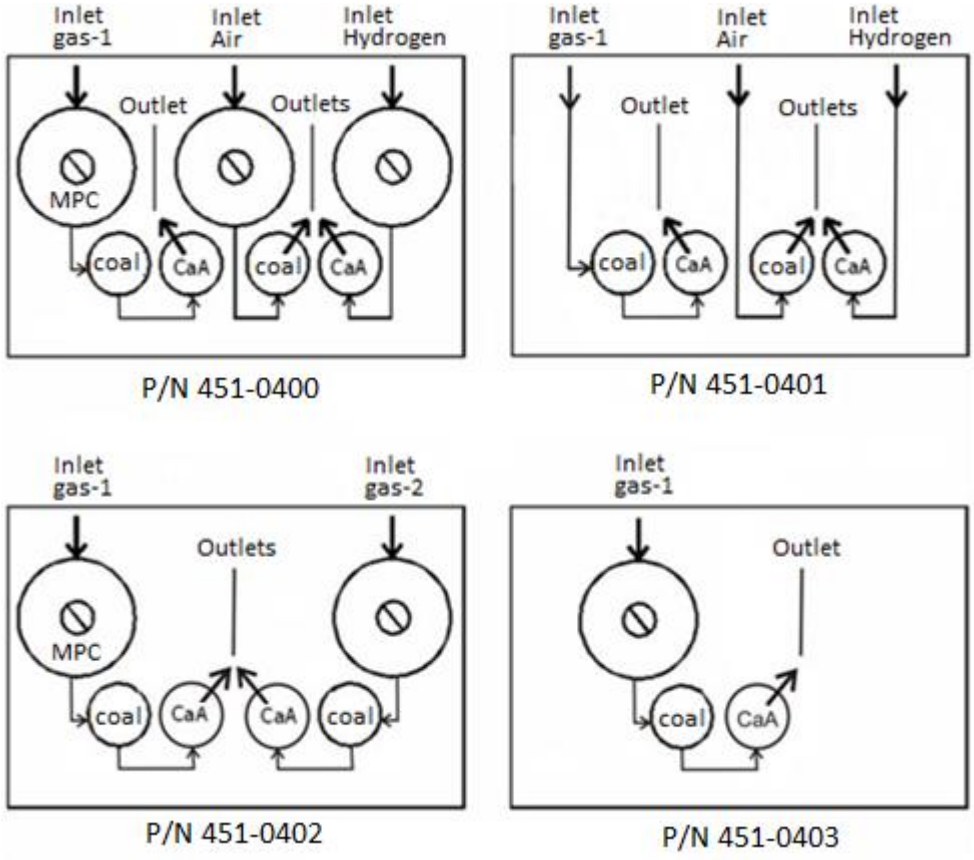


Figure 4 – Pneumatic diagrams for different models

Model P/N 451-0400

One-stage gas regulator mounted on gas cylinder (15 MPa) may cause pressure fluctuations. To stabilize pressure in such lines, filters block with three channels (carrier gas, hydrogen, air) is recommended. The second reducing stage at the manual pressure controller of the filters blockwill stabilize pressure and consequently baseline of detectors.

Model P/N 451-0401

Carrier gas 1, hydrogen, air are connected to non-stabilizing pressure suppliers (gas vessels).

Model P/N 451-0402

Carrier gas 1 and carrier gas 2 are connected to non-stabilizing pressure suppliers (gas vessels).

Model P/N 451-0403

Air is connected to non-stabilizing pressure suppliers (gas vessels).

If GC supplied with air compressor made by Chromatec, the air line can be connected from compressor outlet to GC directly.

If GC supplied with hydrogen generator made by Chromatec, the hydrogen line can be connected from compressor outlet to GC directly.

3 Usage

3.1 Safety provisions

2.1.1 When working with Filters block “Design and safe operation of the compressed gases and pressure vessels regulations” should be observed.

The danger sources are:

- Gas lines with high pressure (0.4 MPa);
- Gaseous hydrogen usage.

When working with hydrogen, fire safety measures should be observed (according to GOST 12.1.004).

Filters block maintenance is to be performed only after gas lines had been closed.

3.2 Maintenance

2.2.1 Maintenance of Filters block involves filters sorbent replacement or regeneration.

Recommended regeneration time schedule:

- For filters with molecular sieve CaA – in every (300–500) hours of work;
- For filters with absorbent charcoal – in every (2000–3000) hours.

Procedures:

For adsorbent regeneration filters top part is screwed out (counterclockwise) and the adsorbent is emptied from them.

Mol. Sieve adsorbent is baked at 400 °C for 6 hours, active charcoal adsorbent is baked at (150-155) °C for 3 hours.



4 Claims

In case of Filters block failure within warranty period it is necessary to:

- draw up a technically reasoned act of defects concerning its incompliance with technical requirements, specified in section 3;
- make abstracts from section "Acceptance certificate";
- specify the organization that performed putting into operation;

The claim should be sent to the address:

Special Design Office “Chromatec”, 94 Stroiteley Str., Yoshkar-Ola, Russian Federation 424000; or at Correspondence address: Central post office, P.O. box 84, Yoshkar-Ola, Mari-El republic, Russian Federation 424000.

424000 г. Йошкар-Ола, ул. Строителей 94, СКБ "Хроматэк" или 424000, г.Йошкар-Ола, Главпочтамп, а/я 84.

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